

4932 - <sup>12</sup>/1878

84. DRAWING.  
43 # Tools.  
C. Cont. made.

FIG. 1.

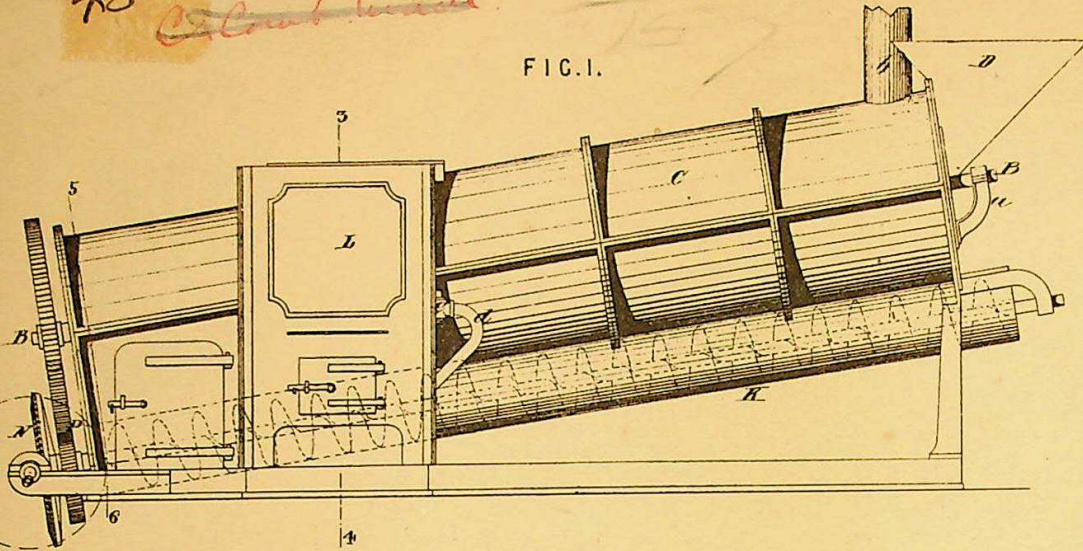


FIG. 5.

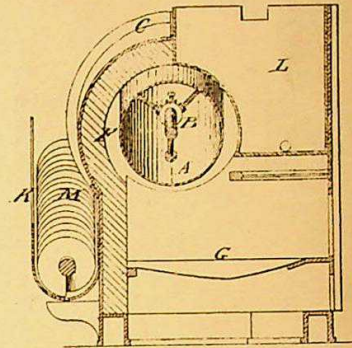


FIG. 2.

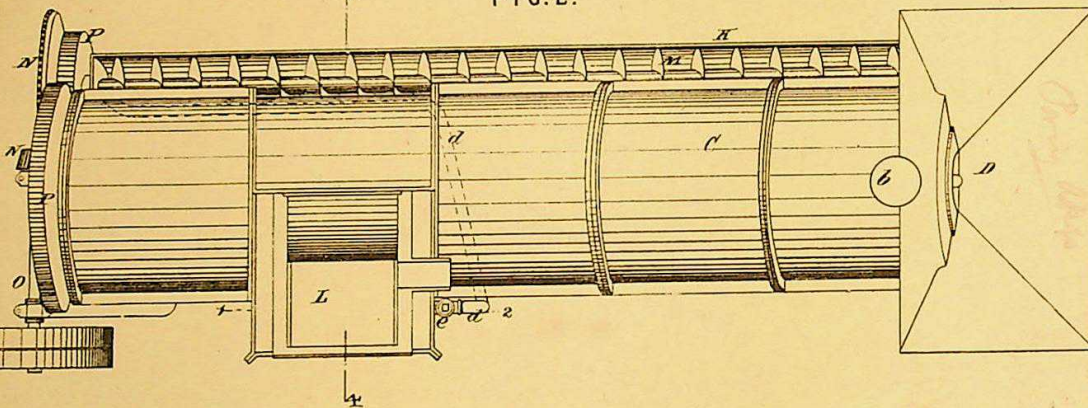


FIG. 3.

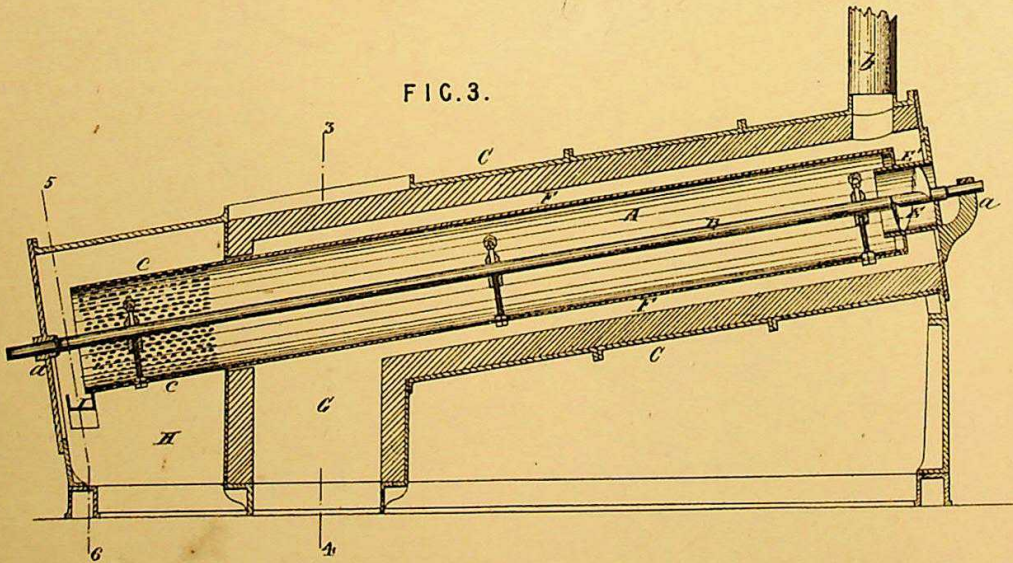


FIG. 6.

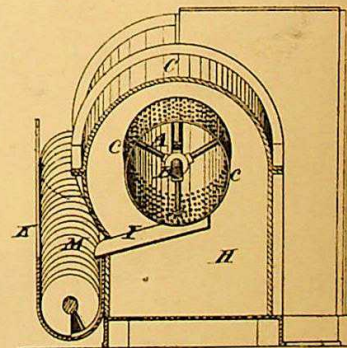
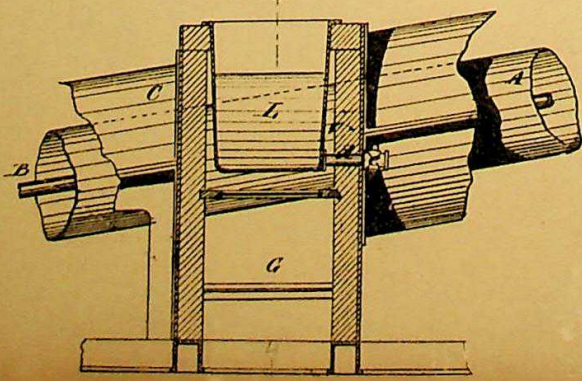


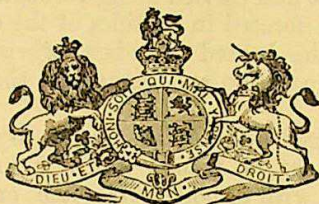
FIG. 4.





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1878



A.D. 1878, 3rd DECEMBER. N° 4932.

Apparatus for the Preparation of Artificial Asphaltum, &c.

LETTERS PATENT to William Beachim Beauchamp, of Frome, in the County of Somerset, Colliery Proprietor, for the Invention of "IMPROVEMENTS IN APPARATUS EMPLOYED IN THE PREPARATION OF ARTIFICIAL ASPHALTUM AND OTHER LIKE COMPOSITIONS."

Sealed the 9th May 1879, and dated the 3rd December 1878.

PROVISIONAL SPECIFICATION left by the said William Beachim Beauchamp at the Office of the Commissioners of Patents on the 3rd December 1878.

WILLIAM BEACHIM BEAUCHAMP, of Frome, in the County of Somerset, Colliery Proprietor. "IMPROVEMENTS IN APPARATUS EMPLOYED IN THE PREPARATION OF ARTIFICIAL ASPHALTUM AND OTHER LIKE COMPOSITIONS."

My Invention relates to improved apparatus to be used in the preparation of an asphalte or composition intended more particularly for making or covering floors, footpaths, roads, and similar surfaces, by the treatment and admixture of gravel, ashes, cement, or sand and tar, pitch, or other like materials. Heretofore the several operations involved in the process, *viz.*, the heating or drying of the gravel or sand and the mixing therewith of boiled tar or pitch (for example) have been performed by hand.

Now my Invention has for its object the production of an apparatus by means of which the whole of the operations are carried on continuously in an automatic manner, whereby increased facility and economy in the conduct of the process and more satisfactory results are obtained.

In carrying out my Invention in order to effect this object, the combined apparatus is constructed and arranged in the following manner:—

A long hollow cylinder is employed, which is mounted so as to be capable of receiving rotary motion in a chamber heated by a furnace or otherwise. Into this cylinder, which is by preference inclined, is introduced at one extremity the gravel or sand (for example) to be heated or dried, and rotary motion being imparted to



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the cylinder the whole of its contents are continuously displaced and exposed in turn to the action of the heat and carried along through the cylinder to the opposite end. The cylinder is perforated in its sides at the delivery end for a sufficient length, projecting beyond the heated chamber (when such is employed) for the purpose of allowing of the separation and escape of the dust from the gravel or sand. 5

As the material is discharged from the heating or drying cylinder it falls or is conducted into another cylinder or trough which is provided for the purpose of effecting the admixture therewith of boiled tar, pitch, or similar material, the same being added at or about the entrance to the second or mixing cylinder or trough 10 from a boiler situate above or adjacent to the heated chamber.

The mixing cylinder or trough is also, by preference, inclined, the delivery end being arranged at a greater elevation than the inlet end, and in the said cylinder or trough is fitted a shaft having spiral or other suitable vanes or blades, and to which rotary motion is imparted for the purpose of effecting the mixing and incorporating 15 of the several ingredients, and elevating or otherwise delivering the mixture to any required place.

Valves or apparatus are provided for regulating the supply of gravel or sand to the heating or drying cylinder and for regulating the discharge of the pitch or tar from the boiler. 20

If desired, the heating or drying cylinder may be stationary and may be made in the form of a plate or plates, either stationary or moveable, and either horizontal or inclined as is found most suitable. The heating or drying cylinder may be heated by an internal fire or otherwise in lieu of being placed in a heated chamber, and the relative position of the different parts may be varied according to the 25 exigencies of particular cases.

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SPECIFICATION in pursuance of the conditions of the Letters Patent filed by the said William Beachim Beauchamp in the Great Seal Patent Office on the 3rd June 1879.

WILLIAM BEACHIM BEAUCHAMP, of Frome, in the County of Somerset, Colliery 30 Proprietor. "IMPROVEMENTS IN APPARATUS EMPLOYED IN THE PREPARATION OF ARTIFICIAL ASPHALTUM AND OTHER LIKE COMPOSITIONS."

My said Invention relates to improved apparatus to be used in the preparation of an asphalte or composition intended more particularly for making or covering floors, footpaths, roads, and similar surfaces by the treatment and admixture of 35 gravel, ashes, cement, or sand, and tar, pitch, or other like materials. Heretofore the several operations involved in the process, *videlicet*, the heating or drying of the gravel or sand and the mixing therewith of boiled tar or pitch (for example) have been performed by hand. Now my said Invention has for its object the production of an apparatus by means of which the whole of the operations are carried on con- 40



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tinuously in an automatic manner, whereby increased facility and economy in the conduct of the process and more satisfactory results are obtained.

In carrying out my said Invention in order to effect this object, the combined apparatus is constructed and arranged in the following manner:—

- 5 A long hollow cylinder is employed, which is mounted so as to be capable of receiving rotary motion in a chamber heated by a furnace or otherwise. Into this cylinder, which is by preference inclined, is introduced at one extremity the gravel or sand (for example) to be heated or dried, and rotary motion being imparted to the cylinder the whole of its contents are continuously displaced and exposed in  
10 turn to the action of the heat, and carried along through the cylinder to the opposite end. The cylinder is perforated in its sides at the delivery end for a sufficient length, projecting beyond the heated chamber (when such is employed) for the purpose of allowing of the separation and escape of the dust from the gravel or sand. As the material is discharged from the heating or drying cylinder it falls or  
15 is conducted into another cylinder or trough which is provided for the purpose of effecting the admixture therewith of boiled tar, pitch, or similar material, the same being added at or about the entrance to the second or mixing cylinder or trough from a boiler situate above or adjacent to the heated chamber.

- The mixing cylinder or trough is also by preference inclined, the delivery end  
20 being arranged at a greater elevation than the inlet end, and in the said cylinder or trough is fitted a shaft having spiral or other suitable vanes or blades, and to which rotary motion is imparted for the purpose of effecting the mixing and incorporating of the several ingredients, and elevating or otherwise delivering the mixture to any required place.

- 25 Valves or apparatus are provided for regulating the supply of gravel or sand to the heating or drying cylinder, and for regulating the discharge of the pitch or tar from the boiler.

- And in order that my said Invention may be fully understood, I shall now proceed more particularly to describe the same, and for that purpose shall refer to the  
30 several Figures on the annexed Sheet of Drawings, the same letters of reference indicating corresponding parts in all the Figures.

- Figure 1 of the accompanying Drawings represents a side elevation of an apparatus for the preparation of artificial asphaltum constructed according to my said Invention. Figure 2 is a plan; and Figure 3, a central longitudinal section of the  
35 same.

- Figure 4 is a sectional elevation of a portion of the apparatus (the section being taken along the line 1—2 in Figure 2). Figure 5 is a transverse section taken along the line 3—4 (Figures 1, 2, 3, and 4), and Figure 6 is a transverse section taken along the line 5—6 (Figures 1 and 3).

- 40 A is a hollow cylinder fast on an inclined shaft B, which is mounted so as to be free to rotate in bearings at *a, a*, formed in or carried by an outer casing C.

- This cylinder (which is hereinafter designated the "heating or drying cylinder") is intended for the reception of the gravel or sand (for example) to be heated or dried, and which is placed in the hopper D, and on rotary motion being imparted  
45 to the shaft B the said material is gradually introduced into the cylinder by means of the feeding worm E on the shaft B working in the stationary tube E<sup>1</sup>, and as the cylinder partakes of the motion of the shaft the material thus supplied is continuously displaced and carried along through the cylinder to the lower or delivery end. The casing C which encloses the cylinder A forms for the greater portion of its  
50 length or chamber F which is lined with fire brick, and is heated by a furnace G, the products of combustion from such furnace traversing the chamber F so as to impart heat to the moving contents of the cylinder A, the walls of which they envelop in their passage, and finally escaping at the chimney *b*. Beyond the heated chamber F the casing C forms a receptacle H for any dust which may be conducted along with  
55 the gravel or sand, the sides of that portion of the cylinder which extends beyond the said heated chamber being perforated, as shewn at *c* for the separation and escape of such dust from the gravel or sand into the receptacle H. The gravel or



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sand on arriving at the lower or delivery end of the heated cylinder A is conducted by a shoot I into the lower end of an inclined trough K (hereinafter designated the mixing trough), in which the gravel or sand is to be mixed with boiled tar or pitch (for example), the same being contained in a boiler L arranged over the furnace G, and being conducted from the said boiler into the mixing trough K through a pipe *d* 5 fitted with a cock *e* for the facility of regulating the supply of the tar or pitch. In the mixing trough K is mounted, so as to be free to revolve, an archimedian screw M, by the rotation of which the intimate admixture is effected of the gravel or sand discharged from the cylinder A and the tar or pitch supplied from the boiler L, and the mixture is caused to ascend the trough K and is discharged from 10 its upper end into any convenient conduit or receptacle.

In the example of apparatus illustrated in my Drawings, rotary motion is imparted to the screw M by means of bevel gearing N from the shaft O driven by any suitable prime mover, and motion is transmitted from the screw M to the heating or drying cylinder A by means of spur gearing P, but any other convenient 15 means may be employed for the purpose in substitution for the arrangement indicated.

If desired, the heating or drying cylinder may be stationary and be provided with internal rotatory agitators or propellers for displacing its contents, in order to expose every portion thereof to the action of the heat, and for facilitating their 20 passage through and discharge from the heating or drying cylinder. In lieu also of making the cylinder inclined, it may be placed horizontally, and it may further be so arranged as to be heated by an internal furnace or otherwise in lieu of by a heated chamber, and the relative position of the different parts may be varied according to the exigencies of particular cases. 25

Having now described and particularly ascertained the nature of my said Invention, and the manner in which the same is or may be used or carried into effect, I would observe in conclusion that what I consider to be novel and original, and therefore claim as the Invention secured to me by the hereinbefore in part 30 recited Letters Patent is,—

The employment in the preparation of artificial asphaltum and other like compositions of a combined apparatus constructed and arranged so as to effect the heating and drying of the gravel, or sand, or equivalent material, and the admixture therewith of boiled tar, pitch, or equivalent substance, and the delivery of the mixture thus formed from the apparatus, the whole series of operations being 35 carried on continuously and in an automatic manner, substantially as herein-before described.

In witness whereof, I, the said William Beachim Beauchamp, have to this my Specification set my hand and seal, the Third day of May, One thousand eight hundred and seventy nine. 40

W<sup>m</sup>. B. BEAUCHAMP. (L.S.)

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For Her Majesty's Stationery Office.

1879.